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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/523,557

07/14/2005

Bernard John Crewdson

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RATNERPRESTIA
P O BOX 980
VALLEY FORGE, PA 19482-0980

EXAMINER

STALDER, MELISSA A

ART UNIT

PAPER NUMBER

4162

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/523,557	Applicant(s) CREWDSON, BERNARD JOHN	
	Examiner MELISSA STALDER	Art Unit 4162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2-01-2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3, 4, 6, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. Claim 1, line 6 and claim 7, line 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The use of "and/or" in the phrase "containing copper and/or iron or iron oxide" renders the claim indefinite.

3. Claims 6 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim does not specify what exactly is meant by the phrase "wherein the volume of oxygen scavenger is 5 to 20% of the volume of the shift catalyst." As the phrase is worded now, the examiner does not know how it is meant to limit the claims.

4. Claim 1 recites the limitation "the shift reaction" in line 2. There is insufficient antecedent basis for this limitation in the claim.

5. Regarding claim 1, line 3; claim 3, line 2; and claim 7, line 2, the limitation "the reduced state" has insufficient antecedent basis for this limitation in the claim.

6. Regarding claim 4, line 2, the limitation "the product of reducing copper compounds" has insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 2, 6, 7, 8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi (WO 03/076069) in view of Wagner (EP 721,799) and Ebner (US 6,387,461). Shi teaches an oxygen-resistant catalyst that will support reaction of oxygen with the fuel or reformat in a first bed which is positioned upstream of a second bed containing the reduced catalyst where the two beds are adjacent. Shi teaches that the second oxygen-sensitive catalyst can be reduced copper. Shi also teaches that the amount of the first catalyst will depend on its activity and kinetics and that the lowest feasible amount is generally preferred (p. 7). Shi, however, does not teach copper or iron as an oxygen scavenger or the percentage of copper as a shift catalyst (pp. 3- 4). Wagner teaches that a typical composition of a low temperature shift catalyst is comprised of from 30 to 60% CuO (p. 1, line 56). It would have been obvious to one of ordinary skill in the art at the time of the invention to use copper in this amount because Wagner teaches that copper is an active species for low temperature shift catalyst and that copper is used in this percentage because depending on the formulation and preparation and catalyst conditions, up to 50% of the copper surface area may be lost. Ebner teaches an oxygen scavenger composition represented by the formula $M'M''_2OH(SO_3)_2H_2O$ where M'' can comprise Fe^{2+} or Cu^{2+} (col. 4, lines 8-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to use this

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oxygen scavenging composition because the composition has enhanced oxygen scavenging activity and capacity. Further, Shi teaches that an effective oxygen scavenging composition is needed in order to prevent oxygen poisoning of the shift catalyst (p. 3, lines 13-17).

9. Claims 3, 4, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi (WO 03/076069) in view of Wagner (EP 721,799) in view of Twigg (US 4,810,685). Shi teaches an oxygen-resistant catalyst as discussed above and Wagner teaches the copper composition of a low temperature shift catalyst, but neither Shi nor Wagner teaches an oxygen scavenger. Twigg teaches an oxygen scavenger (a catalyst that can be an adsorbent and which removes impurities) (col. 1, lines 5-15) where a ceramic material is itself a catalyst when the ceramic material is made up of at least 50% by weight of oxides of copper. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the oxygen scavenger of Twigg in the catalyst system taught in Shi and Wagner because Shi teaches that an effective oxygen scavenging composition is needed in order to prevent oxygen poisoning of the shift catalyst (p. 3, lines 13-17).

10. Regarding Claims 4 and 10, Twigg teaches a ceramic foam catalyst or support where the ceramic material used can be calcium aluminate cement. It would have been obvious to one of ordinary skill in the art at the time of the invention to use this cement support because Twigg teaches that the ceramic foam catalyst support can be used with a wide range of catalysts (col. 4, lines 7-40).

11. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi (WO 03/076069) in view of Wagner (EP 721,799) in view of Ebner in view of Twigg and further in view of Miller (US 5,985,169). Miller teaches an oxygen scavenger that is preferably copper where the copper is coated on a cement paste where the amount of metal is at least about 5 percent by weight copper and preferably 5 to 30 percent by weight (col. 6,

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lines 33-66). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the oxygen scavenger of Miller in the catalyst system taught in Shi and Wagner because Shi teaches that an effective oxygen scavenging composition is needed in order to prevent oxygen poisoning of the shift catalyst (p. 3, lines 13-17).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA STALDER whose telephone number is (571)270-5832. The examiner can normally be reached on Monday-Friday, 8:00-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MS

/Jennifer McNeil/

Supervisory Patent Examiner, Art Unit 4162